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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: OPTICALLY VARIABLE PIGMENTS HAVING AN ASYMMETRICAL LAYER STRUCTURE

(57) Abstract: The present invention relates to pigments whose particles have a length of from 2 μ m to 5mm, a width of from 2 μ m to 2mm and a thickness of from 50 nm to 1.5 μ m and a ratio of length to thickness of at least 2:1, the particles having a core of a metallically reflecting material having two substantially parallel faces, the distance between which is the shortest axis of the core, comprising (a), optionally, on one parallel face of the core, an SiO₂ layer wherein 0.95 < $y \le 2.0$, (b), on the SiO₃ layer, an SiO₃ layer wherein 0.95 < $z \le 2.0$, to a method for the production thereof, and to the use thereof in paints, textiles, ink-jet printing, cosmetics, coating compositions, plastics, printing inks and in glazes for ceramics and glass. The pigments without an SiO₃ layer produce brilliant colours. The pigments with an SiO₃ layer are opaque and exhibit brilliant colours with a metallic appearance.

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INTERNATIONAL SEARCH REPORT

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			FCI/EF U	3/3001/						
A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C09C1/00										
According to International Patent Classification (IPC) or to both national classification and IPC										
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Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, WPI Data										
C. DOCUMENTS CONSIDERED TO BE RELEVANT										
Category °	Citation of document, with indication, where appropriate, of the rele	Relevant to daim No.								
X	EP 0 803 549 A (CIBA GEIGY AG) 29 October 1997 (1997-10-29) cited in the application claims 1-15; examples 5-21	1-10								
Α	WO 01 57287 A (SOMMER GUENTER ;EC STANDARD BRONZEPULVER (DE)) 9 August 2001 (2001-08-09) the whole document	1-10								
А	WO 02 40599 A (FLEX PRODUCTS INC) 23 May 2002 (2002-05-23) abstract	1,2								
Further documents are listed in the continuation of box C. Patent family members are listed in annex.										
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubte on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *A* document or particular cannot be considered document is combined in the art. *A* document or particular cannot be considered document is combined in the art. *A* document member of the strength of the international filing date but later than the priority date claimed			in to in conflict wid the principle or lar relevance; the red novel or cann e step when the lar relevance; the red to involve an ination being obv	thed after the international filing date not in conflict with the application but the principle or theory underlying the ar relevance; the claimed invention at novel or cannot be considered to step when the document is taken alone ar relevance; the claimed invention at to involve an inventive step when the ed with one or more other such docuation being obvious to a person skilled						
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Information on patent family members

Internation pplication No
PCT/EP 03/50817

					
Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0803549	A	29-10-1997	US CA DE EP JP TW	5766335 A 2203585 A1 59704636 D1 0803549 A2 10060303 A 448218 B	16-06-1998 25-10-1997 25-10-2001 29-10-1997 03-03-1998 01-08-2001
WO 0157287	A	09-08-2001	DE AU CA WO EP EP JP US	10004888 A1 2852301 A 2398165 A1 0157287 A1 1252355 A1 1266977 A2 1266978 A2 2003528168 T 2003075079 A1	09-08-2001 14-08-2001 22-07-2002 09-08-2001 30-10-2002 18-12-2002 18-12-2002 24-09-2003 24-04-2003
WO 0240599	A	23-05-2002	US EP WO	6572784 B1 1335954 A1 0240599 A1	03-06-2003 20-08-2003 23-05-2002